The Globally Harmonized System (GHS) for Hazard Classification and Labelling

Development of a Worldwide System for Hazard Communication

What is the GHS?

- A common and coherent approach to defining and classifying hazards, and communicating information on labels and safety data sheets.
- Target audiences include workers, consumers, transport workers, and emergency responders.
- Provides the underlying infrastructure for establishment of national, comprehensive chemical safety programs.

Why is the GHS needed?

- No country has the ability to identify and specifically regulate every hazardous chemical product.
- For example, in the United States, there are an estimated 650,000 such products.
- Adoption of requirements for information to accompany the product helps address protection needs.

Why? (cont.)

- Many different countries have come to the same conclusion about using information dissemination as a regulatory means to address chemical hazards.
- While similar, they are different enough to require multiple labels and safety data sheets for the same product in international trade.

Why? (cont.)

- Countries with systems have different requirements for hazard definitions as well as information to be included on a label or material safety data sheet.
- For example, a product may be considered flammable or toxic in one country, but not in another to which it is being shipped.

Why? (cont.)

- These differences impact both protection and trade.
- In the area of protection, users in countries that don’t have specific requirements may see different label warnings or data sheet information for the same chemical.

Why? (cont.)

- In the area of trade, the need to comply with multiple regulations regarding hazard classification and labelling is costly and time-consuming.
- Small to medium enterprises are effectively precluded from international trade in chemicals due to the regulatory burden of compliance

Benefits of Harmonization

- Countries, international organizations, chemical producers and users of chemicals all benefit.
  - Enhance protection of humans and environment.
  - Facilitate international trade in chemicals.
  - Reduce need for testing and evaluation.
  - Assist countries and international organizations to ensure the sound management of chemicals.

International Mandate

- An international mandate to harmonize was adopted at the United Nations Conference on the Environment and Development (UNCED) in 1992 in Brazil:
  - *A globally-harmonized hazard classification and compatible labelling system, including material safety data sheets and easily understandable symbols, should be available, if feasible, by the year 2000.*

Major Existing Systems

- UN Transport Recommendations
- European Union (EU) Directives on Substances and Preparations
- Canadian Requirements for Workplace, Consumers and Pesticides
- US Requirements for Workplace, Consumers and Pesticides

Principles Of Harmonization

- Protections will not be reduced;

  comprehensibility will be key.

- All types of chemicals will be covered; will be based on intrinsic properties (hazards) of chemicals.

- All systems will have to be changed.

Process of Harmonization

- Under the umbrella of the Interorganization Programme for the Sound Management of Chemicals (IOMC). Coordinating Group for Harmonization of Chemical Classification Systems (CG/HCCS) managed the process.
- Technical work divided among international focal points.

The Technical Focal Points

- The Organization for Economic Cooperation and Development (OECD)
- The UN Committee of Experts for the Transport of Dangerous Goods (UNCETDG)
- The International Labor Organization (ILO)

The Scope of the GHS

- Covers all hazardous chemical substances, dilute solutions, and mixtures.
- Pharmaceuticals, food additives, cosmetics and pesticide residues in food will not be covered at the point of intentional intake, but will be covered where workers may be exposed, and in transport.

The GHS Elements

Classification Criteria

- Health and Environmental Hazards
- Physical Hazards
- Mixtures

Hazard Communication

- Labels
- Safety Data Sheets

Health & Environmental Hazards

- Acute Toxicity
- Skin Corrosion/Irritation
- Serious Eye Damage/Eye Irritation
- Respiratory or Skin Sensitization
- Germ Cell Mutagenicity
- Carcinogenicity
- Reproductive Toxicity
- Target Organ Systemic Toxicity – Single and Repeated Dose
- Hazardous to the Aquatic Environment

Tiered Approach to Classification

Generally use test data for the mixture, when available

Use bridging principles, if applicable

For health and environmental hazards, estimate hazards based on the known ingredient information

Physical Hazards

- Definitions, test methods and classification criteria for transport were used as a basis for the work since they were already harmonized.

Physical Hazards

Explosives
Flammability – gases, aerosols, liquids, solids
Oxidizers – liquid, solid, gases
Self-Reactive
Pyrophoric – liquids, solids
Self-Heating
Organic Peroxides
Corrosive to Metals
Gases Under Pressure
Water-Activated Flammable Gases

Comprehensibility

Guiding principles:

- Information should be conveyed in more than one way.
- The comprehensibility of the components of the system should take account of existing studies and evidence gained from testing.
- The phrases used to indicate the degree (severity) of hazard should be consistent across different hazard types

Labels

- The Working Group identified about 35 different types of information that are currently required on labels by different systems.
- To harmonize, key information elements needed to be identified.
- Additional harmonization may occur on other elements in time, in particular for precautionary statements.

Key Label Elements

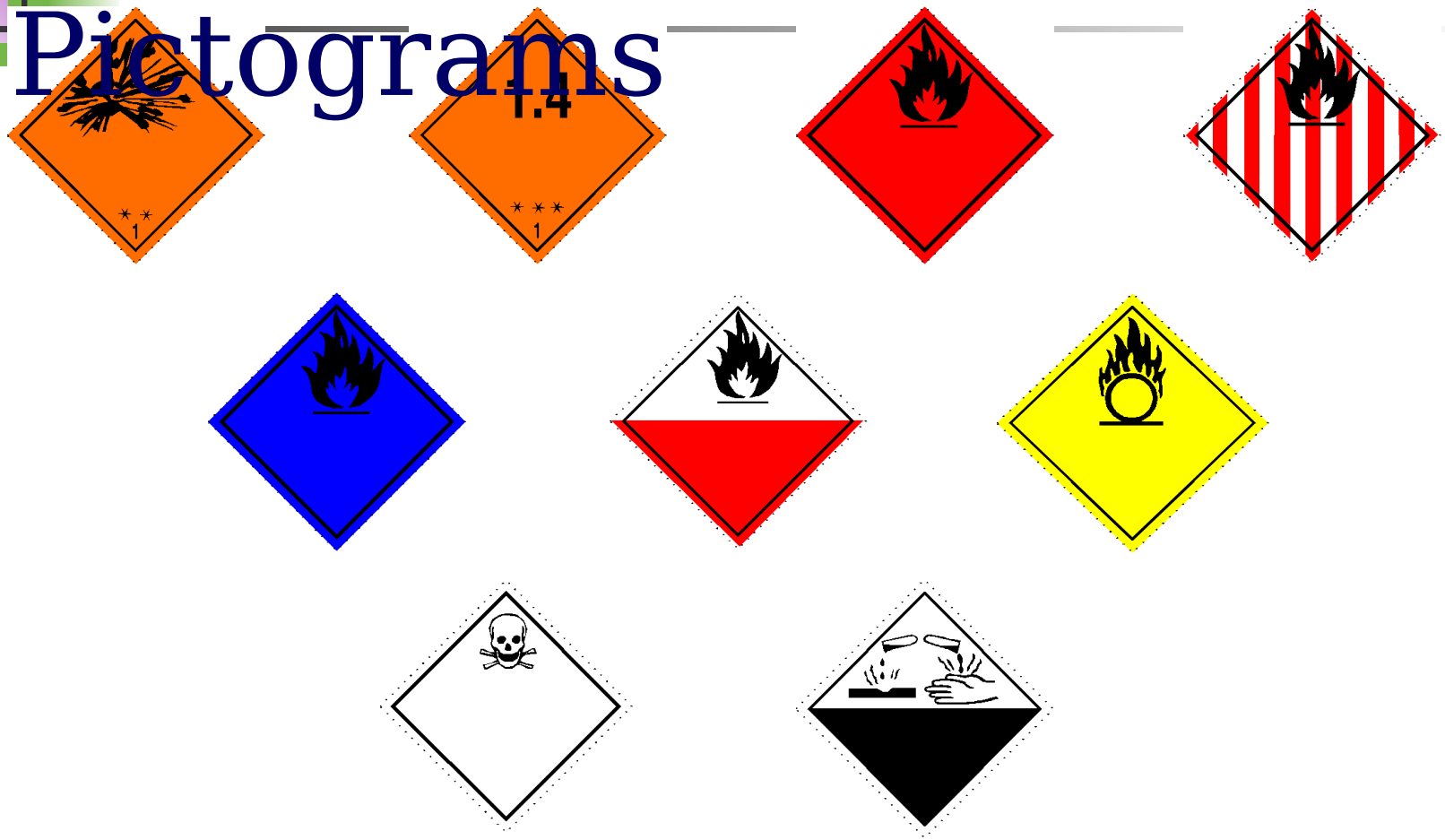
- Product identifier
- Supplier identifier
- Chemical identity
- Hazard pictograms*
- Signal words*
- Hazard statements*
- Precautionary information

***Standardized**

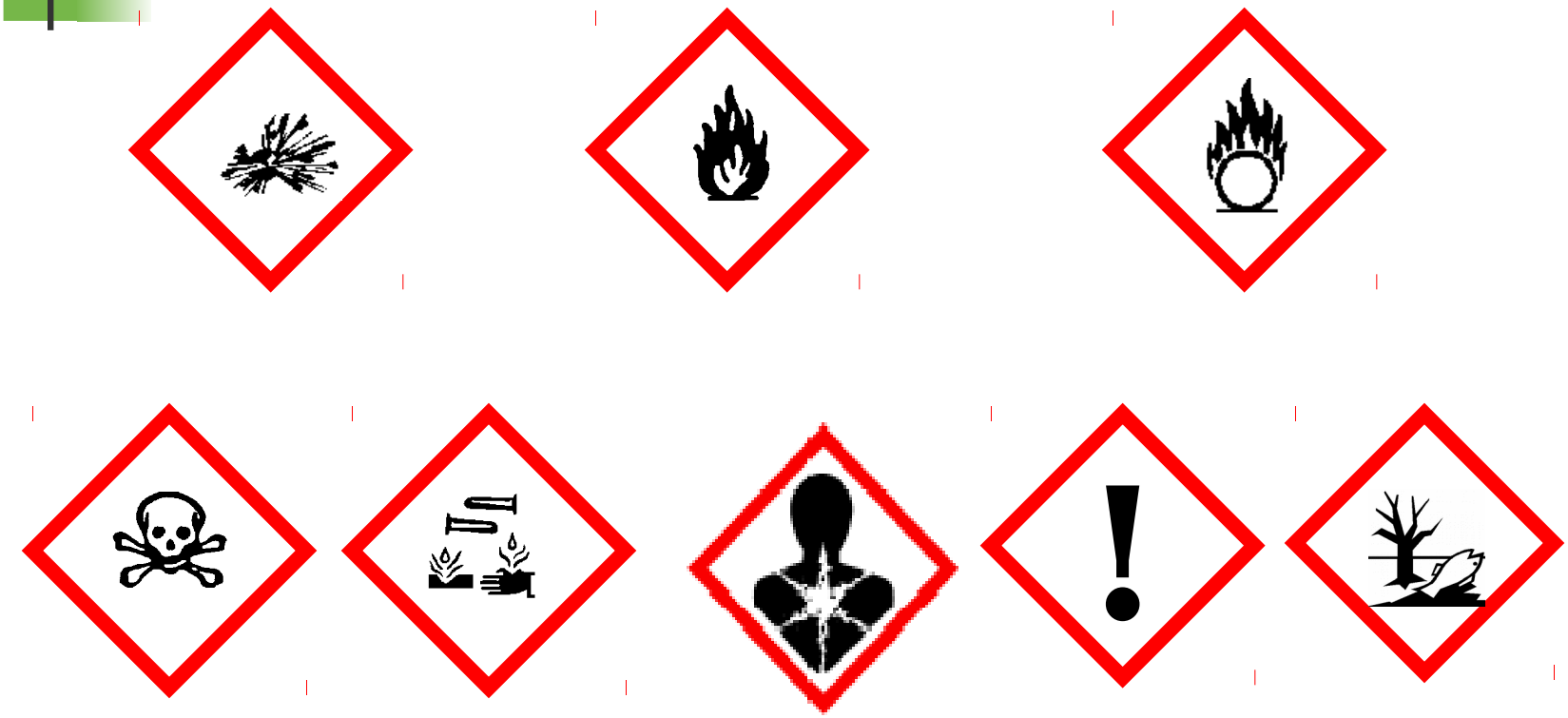
Pictogram Shape and Colour

- For transport, pictograms will have the background and symbol colours currently used.
- For other sectors, pictograms will have a black symbol on a white background with a red diamond frame. A black frame may be used for shipments within one country.
- Where a transport pictogram appears, the GHS pictogram for the same hazard should not appear.

Transport Pictograms



GHS Pictograms



Signal Words

"Danger" or "Warning"

- Used to emphasize hazard and discriminate between levels of hazard.

Hazard Statements

- A single harmonized hazard statement for each level of hazard within each hazard class
  - Example: Flammable liquids
    - Category 1: Extremely flammable liquid and vapour
    - Category 2: Highly flammable liquid and vapour
    - Category 3: Flammable liquid and vapour
    - Category 4: Combustible liquid

Precautionary Information

- GHS label should include appropriate precautionary information.
- The GHS document includes examples of precautionary statements which can be used.
- The intent is to harmonize precautionary statements in the future.

Role of the SDS in the GHS

- The SDS should provide comprehensive information about a chemical substance or mixture.
- Primary Use: The Workplace
- Employers and workers use the SDS as a source of information about hazards and to obtain advice on safety precautions.

SDS Format: 16 headings

1. Identification
2. Hazard(s) identification
3. Composition/information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure control/personal protection

Format: 16 headings (cont.)

9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information

Confidential Business Information

- National authorities should establish appropriate mechanisms for CBI protection. CBI will not be harmonized under the GHS.
- The provisions for CBI protection should not compromise the health and safety of users.
- CBI claims should be limited to the names of chemicals and their concentrations in mixtures.
- Mechanisms should be established for disclosure in emergency and non-emergency situations.

Status of the GHS

- Technical work is done.
- A new UN group has been established to address implementation and maintenance of the GHS.
- The GHS was adopted in December 2002 in the UN.
- It will be available for countries to adopt in 2003.

Status in the US

- US agencies with requirements for labels and MSDSs have been actively involved in the development process.
- Could be adopted either:
  - Legislatively in Congress; or
  - By regulation in each affected agency.

Conclusion

- Development of the GHS has been a long and complicated process.
- Hopefully, it will be adopted by countries around the world and will achieve the projected benefits for protection and trade.

Information Sources

- OSHA has a web page on the GHS:

http://www.osha.gov/SLTC/hazardcommunications/global.html

- Includes links to the completed GHS document & international organizations.